

REMARKS

The application now contains claims 1-16 all of which are under examination

SUPPORT

Support for the lower range of particle diameter of "150" can be found in the specification as filed in the second paragraph on page 9.

Support for new Claim 9 can be found in original Claim 5. Claim 9 is identical to Claim 5 except that Claim 9 is dependent on claim 2.

Support for new claim 10 can be found in original claim 8. Claim 10 is identical to original Claim 8 except that Claim 10 is dependent on Claim 2.

ISSUES UNDER 35 U.S.C. § 112

The rejection of Claim 7 in paragraphs 1-3 of the last Office Action is traversed but has been rendered to moot by the current amendments to Claim 7.

PROVISIONAL DOUBLE PATENTING REJECTION

The Examiner is thanked for informing the undersigned of his opinion that application no. 10/013545 (the '545 application) and application 09/897,638 (the '638 application) might present in the future issues of double patenting.

With respect to the '545 application, it is respectfully submitted that the claims in this case as amended present no double patenting issue.

With respect to both applications all rights are reserved to respond in the future should a double patenting rejection be made. All rights are reserved to take whatever action is necessary including, if appropriate, the filing of a Terminal Disclaimer.

ISSUES UNDER 35 U.S.C. § 102

The rejection of Claims 2, 6 and 8 in paragraphs 4 and 5 of the last Office Action as anticipated by U.S. 2002/0068210 "Saito" is traverse for reasons which appear more fully below.

ISSUES UNDER 35 U.S.C. § 103

The rejection of Claims 1, 3-5 and 7 in paragraph 6-8 of the last Office Action as obvious over Saito in view of U.S. Patent 3,634,569 "Emanuelson" and is traversed for reasons which appear more fully below.

NOVELTY AND NONOBVIOUSNESS

(1) Claim 1

Claim 1 defines a separator having carbon particles longer than 70 μm in the major axis direction and longer than 50 μm in the minor axis direction along the vertical cross section of the separator.

Emanuelson discloses a graphite powder having the specific distribution of particle size as shown in Table 1. The mean particle size of the powder is about 74 to about 100 μm in view of 50 % of cumulative weight as shown in Fig. 2.

However, it is apparent to the skilled artisan that this particle size does not mean a diameter of graphite powder in a separator but means a diameter of graphite powder itself. Therefore, Emanuelson is silent about the particle size in the resulting plate.

Further, assuming that the shapes of the graphite particles are spherical it cannot be that all graphite particles in the sectional area are cut in the center. Therefore, the graphite particle size in the sectional area in the vertical direction is generally smaller than the graphite diameter in the separator.

That is, even though the graphite particles having the mean diameter of 74-100 μm exist in the separator without changing the

particle form, the particle size which appears on the surface of the section is smaller than the particle diameter.

Accordingly, the graphite particle size must be smaller than the claimed range in the vertical cross section of the separator made of Emanuelson's graphite. Furthermore, even if the graphite particle size corresponds to the claimed inventive range, the graphite does not occupy more than 50% of the sectional area in the vertical direction in view of the distribution described in Table I.

(2) Claims 2 and 6

One of the features of Claims 2 and 6 resides in using spherical or massive graphite having a mean particle diameter of 150 to 500 μm for a fuel cell separator.

Saito discloses the following matter.

The particle diameter of the powdery carbon filler can be 10 nm to 100 μm , preferably 20 to 80 μm in terms of average particle diameter. [Saito paragraph 0023]

Therefore, Saito is silent about the spherical or massive graphite having a mean particle diameter of 150 to 500 μm .

Furthermore, as mentioned above, the graphite powder of Emanuelson has a mean particle size of about 74 to about 100 μm .

Therefore, Emanuelson is also silent about the spherical or massive graphite having a mean particle diameter of 150 to 500 μm .

Accordingly, the present invention is quite different from that of Saito. Furthermore, it is not obvious for those skilled in the art to adjust the mean graphite size to 150 to 500 μm from the cited references.

(3) Claims 3, 7 and 9

The Examiner argues that Emanuelson reveals graphite structure having a density of 1.8 g/cc or as high as 2.0 g/cc.

However, this density does not mean a bulk density of graphite powder but means a density of resulting plate (graphite structure) in view of the following Emanuelson passages:

It has also been discovered that a distribution of particle sizes as shown in Table I is important in producing graphite structures with densities as high as 2.0 g/cc. (Column 3, lines 17-20)

The structure was post-cured and resulted in a plate with characteristics tabulated in column 1 of Table II. (Column 4, EXAMPLE I)

After post-curing, this plate had characteristics tabulated in column 2 of Table II. (Column 4, EXAMPLE II)

Emanuelson is therefore silent about the graphite having a bulk density higher than 0.6 g/ml.

At any event, those skilled in the art cannot easily arrive at the present invention from the cited references. The cited references do not render the claimed invention obvious.

Conclusion

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact David R. Murphy (Reg. No. 22,751) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.


Pursuant to the provisions of 37 C.F.R. §§ 1.17 and 1.136(a), the Applicants hereby petition for an extension of a one (1) months to August 6, 2004 in which to file a reply to the Office Action. The required fee of \$110.00 is enclosed herewith.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.


Respectfully submitted,

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